

## Manufacturing Advanced Channel Wall Rocket Liners, Phase I

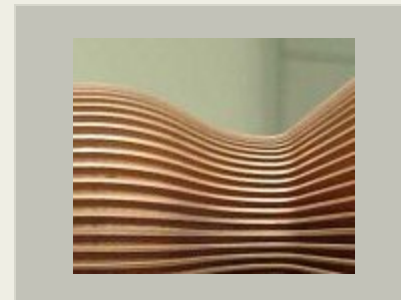
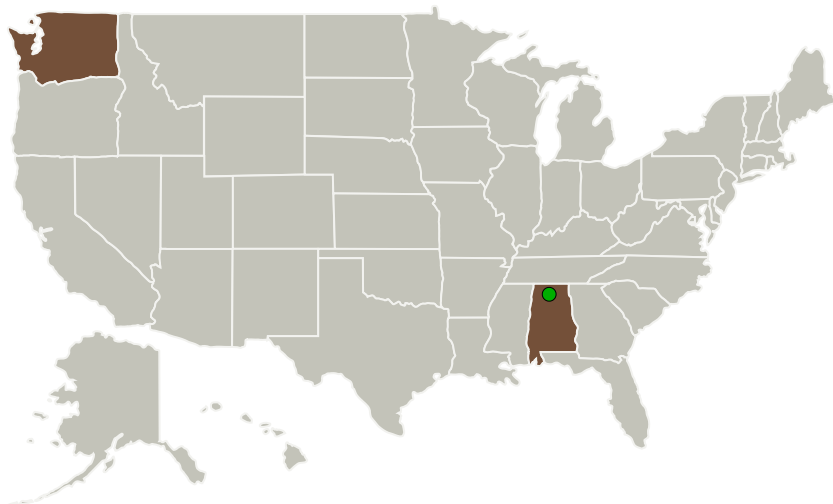
Completed Technology Project (2014 - 2014)



## Project Introduction

This SBIR will adapt and demonstrate a low cost flexible method of manufacturing channel wall liquid rocket nozzles and combustors, while providing developers a means to manufacture more complex designs for improved engine performance. Current channel wall engine concepts are limited by capabilities of available manufacturing methods. This SBIR will provide a cold, non-chemical, low load alternative while supporting more complex liner designs. It will enable features such as cooling channels with complex patterns, bifurcations, flow trips, varying width and depth, thin hot walls, negative wall taper, more accurately placed channel walls and more complex liner contours. Ormond will work together with contacts at NASA and Aerojet Rocketdyne during Phase I to provide demonstration coupons of current engine concepts and to identify additional design options that can be incorporated through use of the proposed technology. Cost and technical feasibility will be demonstrated. A Phase II program will result in a TRL-6 level means of machining channel combustor and nozzle liners. Scalability to SSME class of engines will be addressed. Government and commercial applications that may benefit from the proposed technology development include channel wall liquid rocket engines, ground based turbine generators, advanced turbine blades, scramjets, space optics, and down-hole oil well tooling.

## Primary U.S. Work Locations and Key Partners



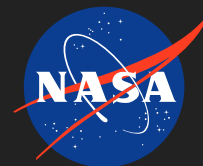
Manufacturing Advanced  
Channel Wall Rocket Liners  
Project Image

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Organizations Performing Work	Role	Type	Location
Ormond, LLC	Lead Organization	Industry	Auburn, Washington
● Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

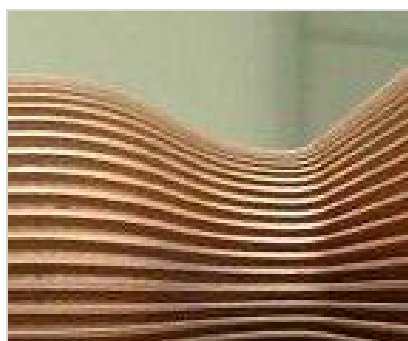
Primary U.S. Work Locations	
Alabama	Washington

## Project Transitions

**June 2014:** Project Start**December 2014:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/140531>)

## Images

**Project Image**

Manufacturing Advanced Channel Wall Rocket Liners Project Image  
(<https://techport.nasa.gov/image/137206>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Ormond, LLC

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

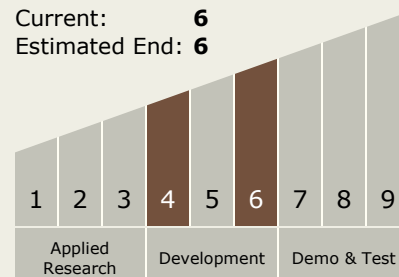
Carlos Torrez

**Principal Investigator:**

Daniel Alberts

## Technology Maturity (TRL)

Start: 4  
Current: 6  
Estimated End: 6



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## Technology Areas

### Primary:

- TX01 Propulsion Systems
  - └ TX01.3 Aero Propulsion
    - └ TX01.3.1 Integrated Systems and Ancillary Technologies

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System